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EXAMINER

GARBER, CHARLES D

ART UNIT PAPER NUMBER

2856

DATE MAILED: 07/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/604,080

Applicant(s)

POOLE, JOHN MCKINLEY

Examiner

Charles D. Gerber

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.135(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 23 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-22 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5 and 7-15 is/are rejected.
- 7) ☒ Claim(s) 4 and 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB-08)
- Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of group I, claims 1-22 in the reply filed on 06/24/2004 is acknowledged. The traversal is on the ground(s) that the searches are the same, there is no undue burden and heating and drying are the same thing. This is not found persuasive because the searches are not the same (as indicated in the requirement for restriction) the burden is substantial (due to the additional searching for separate invention) and heating may be used for more the drying (for example burning off contaminants or calibrating for effect of temperature) and drying may be performed by other means (such as using a desiccant or dry air).

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

Claim 4 is objected to because of the following informalities: "repression" should be spelled --regression--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-3, 5, 7-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dion et al. (Canadian Patent Application CA 2345631 A1) in view of Nitta et al. (US Patent 4,080,564).

Regarding claim 1, Dion discloses a moisture sensor 52 comprising a pair of electrodes (page 5 first paragraph) wherein the sensor is operated to detect moisture in a dryer and wherein controlling circuitry takes plural samples of sensor conductance over a predetermined period of time at the operating temperature; and determines a rate of adsorption of the moisture used for determining a noise free rate of moisture in the sample gas (pages 12-15).

Dion does not expressly recite the sensor electrodes sandwich an aluminum oxide dielectric.

Nitta teaches Al_2O_3 or aluminum oxide in a humidity sensor as well as various other metal oxides (column 2 lines 34-41).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use aluminum oxide in a humidity sensor, as it is a "preferred metal oxide for the sintered substrate".

Dion also lacks heating the sensor to a first temperature above the sample gas temperature and holding the sensor at said first temperature for a first predetermined

period of time; and cooling down the sensor to a second lower temperature over a second predetermined period of time.

Nitta further teaches the sensor including a wire heater 3 operated to heat the sensor for a time period necessary to heat the sensor from 20°C to 400°C, then for another period to cool it back to 20°C (column 5 lines 34-44).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to heat then cool the sensor in this manner in order to clean the surface of contaminant such as water (column 4 lines 63-66) which may interfere with the operation of the sensor.

As for claim 2, the references do not expressly teach 100 samples or a period of about 60 to 90 seconds however

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make 100 samples over a period of about 60 to 90 seconds, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In this case the result effective variable would be a sample value and period necessary to effectively eliminate the characteristic noise.

As for claims 3, 5 and 11, Dion discloses the process involves applying a moving average filter to the plural samples of sensor reading to obtain data filtered for noise reduction but does not teach using ten points. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use ten points, since it has been held that discovering an optimum value of a result effective variable

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involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As for claims 7, the references disclose the claimed invention except for first predetermined period of time is about 15-30 seconds. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the first predetermined period of time to be about 15-30 seconds, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As for claims 8, the references disclose the claimed invention except for second predetermined period of time is about 30-50 seconds. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the second predetermined period of time to be about 30-50 seconds, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As for claims 9, the references disclose the claimed invention except for third predetermined period of time is about 60-90 seconds. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the third predetermined period of time to be about 60-90 seconds, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As for claims 10, the references disclose the claimed invention except for first predetermined period of time is about 15-30 seconds; and second period of time is

about 30-60 seconds; and third period of time is about 60-90 seconds. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the first predetermined period of time to be about 15-30 seconds; and the second period of time to be about 30-60 seconds; and the third period of time to be about 60-90 seconds, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As for claims 12, the references disclose the claimed invention except for first predetermined period of time is about 20 seconds. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the first predetermined period of time to be about 20 seconds, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As for claims 13, the references disclose the claimed invention except for second predetermined period of time is about 40 seconds. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the second predetermined period of time to be about 40 seconds, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As for claims 14, the references disclose the claimed invention except for third predetermined period of time is about 75 seconds. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the third

predetermined period of time to be about 75 seconds, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As for claims 15, the references disclose the claimed invention except for first temperature is about 90°C and said second lower temperature is about 35°C to about 40°C. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the first temperature to be about 90°C and the second lower temperature to be about 35°C to about 40°C, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Allowable Subject Matter

Claims 4, 6, 16-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As for claim 4, Dion also discloses smoothing with non-linear regression but not a linear regression (i.e. least squares or straight line fit) and not on the data already filtered for noise reduction to obtain a slope representative of the rate of adsorption.

Stormborn (US Patent 6,564,633) discloses a humidity sensor teaching "During the self-calibration step, the measurement noise can be filtered extremely effectively, for example, by way of taking a plurality of measurement values during the temperature change, and then applying the least squares method to fit a linear or polynomial response function with the measurement data." However, Stormborn does not apply the

least squares method to data that has already been filtered with a moving average. The combination of the two techniques is not suggested in the prior art of record.

Claims 6 and 16 are substantively the same as claim 4 and is allowable for the same reason.

Claims 17-22 depending from allowable claim 16 are also allowable for the same reason.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The additional references cited on the accompanying form PTO-892 though not cited above are provided to indicate other prior art moisture or gas sensors or other prior art uses of digital signal processing which include one or more features or limitations in common with the instant invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles D. Garber whose telephone number is (571) 272-2194. The examiner can normally be reached on 6:30 a.m. to 3:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cdg

A handwritten signature in black ink, appearing to be 'CDL' or similar, written in a cursive style.